

REMARKS

Favorable reconsideration of this application is requested. The above amendments make editorial revisions to claim 1. New claim 14 is a method claim that tracks product claim 2. The features of new claims 15-17 are shown in Fig. 1, for example.

Applicants appreciate the Examiner's courtesy in discussing this application with the undersigned on February 22, 2006. The discussions of the interview are reflected in the revisions to claim 1 and the following remarks. New claims 14-17 were not discussed during the interview.

Claims 1-8 were rejected for indefiniteness. An editorial revision has been made in claim 1 to address this issue. Applicants appreciate the Examiner's indication that this editorial revision should overcome this issue.

Claims 1-13 were rejected as anticipated by US 6,038,133 (Nakatani). Applicants respectfully traverse this rejection.

The invention of claim 1 includes a structure including a pair of opposed circuit substrates with wiring layers, an insulating layer separating the opposed circuit substrates, an electronic component embedded in the insulating layer, and an inner via in the insulating layer that connects the wiring layers of the opposed circuit substrates. The circuit substrates and the insulating layers contain resins that have different glass transition temperatures, with the Tg1 of the resin in the insulating layer being higher than the Tg2 of the resin in the circuit substrates.

As discussed in the paragraph beginning at page 2, line 34 of the present specification, when the insulating layer has a larger coefficient of expansion than the circuit substrate, the circuit substrates will tend to impede the expansion of the insulating layer in the in-plane direction when the temperature is increased. As a result, the insulating layer will tend to expand in the thickness direction instead. This can cause breakage in the conductivity of the conductive material used for the inner via connecting the opposed circuit substrates. This problem is particularly pronounced in products like those of claim 1 in which an electronic component is housed in the insulating layer. The insulating layer must be thick enough to accommodate the electronic component, and as a result the inner via has a relatively large aspect ratio (length/diameter) and is susceptible to loss of conductivity when the thickness of the insulating layer expands. As shown in the experimental results reported at pages 24-26 of the present specification and the accompanying tables and figures, the different glass transition temperatures

for the resin required by the invention of claim 1 alleviate this problem and advantageously improves the reliability of the product.

Nakatani neither discloses nor suggests the invention of claim 1. The rejection relies on Fig. 4 of the reference. Applicants note that this figure is similar to the admitted prior art of Fig. 10 of the present application, which is discussed at pages 2-3 of the specification. The rejection interprets the layers 401(a) and (c) as satisfying the circuit substrates of claim 1 and the layer 401(b) as satisfying the insulating layer of claim 1. However, contrary to the assertion in the rejection, the reference does not describe or suggest the Tg1 and Tg2 relationship required by claim 1.

The embodiment of Fig. 4 is discussed at cols. 11-12 of the reference. Nowhere is there any indication of any difference in the make-up of the materials used for the various layers 401(a)-(c). In fact, line 23 of col. 11 specifically associates these layers together in discussing their make-up. Likewise, the specific examples discussed at cols. 14-20 fail to include any indication that different resin materials are used in the insulating layers of any particular product. As the reference does not disclose the use of different resin materials in the insulating layers of a given product, it does not lead one of ordinary skill to any particular relationship of glass transition temperatures between resins of the circuit substrates and the insulating layer, and certainly does not lead one of ordinary skill to the specific relationship required by claim 1. Therefore claim 1 and its dependent claims are neither disclosed nor even suggested by the reference. Method claim 9 includes limitations similar to claim 1. Therefore, claim 9 and its dependent claims also are not disclosed or suggested by the reference.

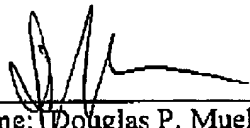
Claim 2 (and corresponding method claim 14) requires a particular minimum difference in glass transition temperature. The experimental work in the present specification shows that the effects of the present invention are particularly advantageous when this feature is present. Therefore, these claims are even further removed from the reference. Similarly, new claims 15-17 are directed to structures that are further distinguished from the structures disclosed by the reference.

In view of the above, Applicants request reconsideration of the application in the form of a Notice of Allowance.

Respectfully submitted,

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